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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/067,366	02/04/2002	Saul R. Dooley	GB 010020	7415

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PHILIPS INTELLECTUAL PROPERTY & STANDARDS
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EXAMINER

ISSING, GREGORY C

ART UNIT	PAPER NUMBER
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3662

DATE MAILED: 10/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/067,366

Applicant(s)

DOOLEY ET AL.

Examiner

Gregory C. Issing

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 August 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 8/4/03 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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1. The disclosure is objected to because of the following informalities:

Page 4, the paragraph beginning at line 26, the language "NAVSTAR SPS GPS" is not clearly written since such nomenclature is not conventionally used together. If "SPS" is "Satellite Positioning System" and "GPS" is "Global Positioning System," the use together is in the very least redundant.

On page 7, line 1, the first paragraph prior to the "Figure 5" description concludes improperly with a colon (:).

On page 7, line 28, the language "using *say* several 10 ms dwells" is not properly written.

On page 7, line 29, the language "or having acquiring" is grammatically incorrect; "acquiring" should be "acquired."

On page 8, line 4, the language "cause by" is grammatically incorrect and should be "caused by."

Appropriate correction is required.

2. Figures 1-4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance. Figure 1 exemplifies a communication network, Figures 2 and 3 merely show respectively, mobile and base station integrated GPS/communication devices, and Figure 4 shows a conventional E-P-L correlator in a GPS processor.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. No new matter should be entered. Added Figure 5, though broadly exemplifying the steps of the method, fails to show how the apparatus of the claims is made. None of the Figures show how the Doppler information is obtained nor how it is utilized. It is suggested that Figure 4 be amended to specifically show for example the carrier

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wave generator 41 or code generator 42 being responsive to the Doppler information, if this is where the compensation, in fact, is done.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claims 1-8 are rejected under 35 U.S.C. 102(e) as being anticipated by Julg.

Julg teaches a satellite navigation receiver wherein it is taught that cross-correlation of a received GPS signal with an internally-generated PN sequence can result in a pseudo-signal travel time, which translates in a known manner to a pseudorange for conventional position determining (col. 1). It is further taught that the travel time has a tendency to vary due to Doppler frequency shift and therefore use of a variably actuatable oscillator in a control loop

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must be used to take into account the Doppler frequency shift (again, col. 1). Additionally, the control loop of Julg includes a synthetic discriminator characteristic generator 225 which detects local maximum and minimum values of the cross-correlation function and generates a curve therebetween. The values are detected in response to Doppler shifts (col. 6). Thus, the VCO 16 controlling the reference signal generator 10 is responsive to the synthetic discriminator characteristic generator 25 which varies over a range between the maximum and minimum values in accordance with measured Doppler shift. The reference signal is accordingly correlated in conventional manner with the received satellite signals for despreading thereof. Julg also discloses determining Doppler shift with/without a priori information. Lastly, Julg teaches performing the compensation of the carrier frequency due to Doppler while using a selected PN code sequence that is identical to the PN code of the transmitted signal; thus, it is deemed that the correlation is performed during the course of a single dwell. The dependent claims stand or fall with the independent claims.

6. Applicant argues that the prior art fails to teach the required claim limitation relating to an “estimate of the variation in Doppler shift as observed on the target signal by the GPS receiver” and “relating to variations in the Doppler over the course of a single dwell.”

Additionally, applicant argues that compensating for a single estimate of the observed Doppler frequency as is allegedly done by the prior art is different from the claimed Doppler variations. Firstly, it is noted that the Doppler shift frequency is inherently a signal that varies over a range since the satellite is constantly moving relative to the GPS receiver. Secondly, the claimed “estimate of the variation in Doppler shift” is met by any GPS receiver that provides a range of values of Doppler shifts since such defines an estimate of the variation of the Doppler shift.

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Thirdly, the language “an estimate of the variation in Doppler shift” is defined in the specification as “fixed frequency offset signal” or “a variable frequency signal” (page 8) and is measured by measuring the variation in frequency of an observed signal (page 7); as best understood, the estimate is merely a control signal that controls either the generated PN reference signal or the received PN signal. The limitations of the dependent claims further define the estimate of the Doppler shift as calculated based on last position of the user or of a base station; this, this does not provide any measurement of any variations in frequencies at all.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Povey et al in view of Krasner.

Povey et al teach Doppler compensation and code acquisition techniques for PN coded spread spectrum signals received by a mobile user from an orbiting satellite. Povey et al require despreading the satellite signal by correlating the received signal with an internally generated reference signal. Further, Povey et al teach compensating for Doppler due to satellite movement including estimating the effective value of a Doppler shift so as to minimize the search in the Doppler dimension. The estimation of the value of the Doppler shift is performed using a pilot carrier on the edge of the spread spectrum signal using a block of FFTs and an averaging technique wherein the averaging technique averages across all of the FFTs to select a Doppler frequency shift. It is further taught the Doppler frequency shift will not be one of the exact FFT

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bin frequencies but rather it will exist as a Doppler spread. The Doppler information is then used in conventional fashion to acquire the received signal. Both the averaging technique and Doppler spread suggest that the Doppler information is based on variations of the frequency. Povey et al differ from the claimed subject matter since the spread spectrum receiver is not disclosed as a GPS receiver but rather as a communication receiver. Krasner teaches the obviousness of integrated GPS/communication devices wherein each receives PN coded spread spectrum signals. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Povey et al by incorporating the Doppler compensation in acquisition of PN coded spread spectrum signals from orbiting navigation satellites as well as communication satellites.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Cheng et al disclose a process of spread spectrum code acquisition in the presence of Doppler shift and data modulation, particularly no ecol. 2 of page 249 wherein it is stated "(s)ince Doppler shift and Doppler shift rate can cause the true hypothesis to drift from cell to cell, their modeling is essential not only to the strategy of cell portioning and subset searching but also to the performance off the resulting acquisition scheme."

Lim et al disclose a carrier frequency detection algorithm for compensation of Doppler shift in DS-CDMA satellite communication wherein Figure 1 exemplifies compensating the incoming signal with the estimates of Doppler variations prior to correlation with an internally generated PN code.

Spillard et al discloses a solution to PN code acquisition of spread spectrum satellite signals wherein all Doppler frequencies are scanned in one dwell time by correlating the

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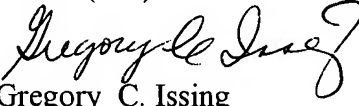
incoming signal with a set of phasors rotating at frequencies covering the range of possible Doppler-shifted carrier frequencies..

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory C. Issing whose telephone number is (703)-306-4156.

The examiner can normally be reached on Mon-Thurs 6:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarcza can be reached on (703)-306-4171. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1113.


Gregory C. Issing
Primary Examiner
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gci